

REMARKS

This Application has been carefully reviewed in light of the Office Action mailed April 23, 2003 ("Office Action"). At the time of the Office Action, Claims 1-22 were pending in the application. In the Office Action, the Examiner rejects Claims 1-8 and 12-19, and objects to Claims 9-11 and 20-22. Applicants amend Claims 1 and 12 to fix various typographical mistakes. Applicants do not admit that these amendments were necessary as a result of any cited art. Applicants add New Claims 23-27. No new matter has been introduced by these amendments or by the New Claims.

Specification Objection

Applicants have amended the abstract of the disclosure per the request of the Examiner.

Claim Objections

The Examiner objects to Claims 9-11 and 20-22 as being dependent upon a rejected base claim. Applicants respectfully thank the Examiner for the indication that Claims 9-11 and 20-22 would be allowable if rewritten in independent form including all the limitations of the base claim and all intervening claims. Applicants respectfully decline the Examiner's invitation at this time, however, in light of the remarks regarding Claims 1-8 and 12-19, as set forth below.

Section 103 Rejections

The Examiner rejects Claims 1-8 and 12-19 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,483,390 issued to Welland ("Welland") in view of U.S. Patent No. 6,469,587 issued to Scoggins ("Scoggins"). Applicants respectfully request reconsideration of this rejection of Claims 1-8 and 12-19.

Claim 1 recites, "A device comprising ... a voltage-controlled oscillator (VCO) circuit, the VCO circuit comprising ... a) a variable capacitor for coarsely tuning the VCO circuit, the variable capacitor providing one of a plurality of capacitance values, each of the plurality of capacitance values corresponding to a distinct frequency band, each of the plurality of capacitance values providing a frequency/voltage characteristic for the VCO that

is sufficiently linear to implement direct modulation for the frequency band ... b) a varactor for fine tuning the VCO circuit ... c) a series capacitor having a capacitance value to linearize a frequency/voltage characteristic of the varactor sufficient to implement direct modulation for a specified channel frequency within the frequency band.” Applicants respectfully submit that the *Welland-Scoggins* combination fails to teach, suggest, or disclose various aspects of Claim 1. Moreover, Applicants respectfully submit that the Examiner’s primary reference, *Welland*, teaches away from “a varactor for fine tuning the VCO circuit,” as recited, in part, in Claim 1. “A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention.” *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). (M.P.E.P. § 2141.02).

For example, *Welland* states that it implements “a phase-locked loop (PLL) frequency synthesizer with a variable capacitance voltage controlled oscillator (VCO) that includes a discretely variable capacitance in conjunction with a continuously variable capacitance.” The discretely variable capacitance provides for coarse tuning while the continuously variable capacitance provides for fine tuning. (*Welland*; col. 3, ll. 34-51). *Welland* further states that therefore the “present invention avoids the need for a traditional varactor implementation in the VCO ... and thereby provides a high-frequency frequency synthesizer that may be fully integrated on a single chip except for an external inductor.” (*Welland*, col. 3, ll. 51-57). *Welland* continues by pointing out various shortcomings of the use of varactors in PLL circuitry. “[T]he typical use of a varactor in cellular phone applications has been a major factor in limiting the integration of PLL circuitry 200 into a single chip.” (*Welland*; col. 7, ll. 1-4). Therefore, faced with certain limitations associated with varactors, *Welland* clearly abandons the use of varactors altogether in favor of variable capacitors for both coarse and fine tuning. The Examiner now suggests, however, that despite the clear abandonment of the use of varactors by *Welland* one of ordinary skill in the art would somehow be motivated to modify the VCO circuitry of *Welland* to include a varactor. Applicants respectfully traverse the Examiner’s position and submit that *Welland* specifically teaches away from the use of varactors. The Examiner has therefore failed to establish a *prima facie* case of obviousness.

Even if the *Welland-Scoggins* combination were proper – which Applicants traverse – the *Welland-Scoggins* combination still fails to teach, suggest, or disclose a “series capacitor

having a capacitance value to linearize a frequency/voltage characteristic of the varactor sufficient to implement direct modulation for a specified channel frequency within the frequency band.” It is unclear from the Office Action what portions of *Welland* and/or *Scoggins* the Examiner relies upon to reject this element of Claim 1. If the Examiner relies upon capacitor 406p (as illustrated in FIGURE 10 of *Welland*) or its constituent capacitors (as illustrated in FIGURES 17a-c) to reject the “series capacitor” of Claim 1, the Examiner’s reliance is misplaced for a number of reasons.

First, the capacitor 406p illustrated in FIGURE 10 and in FIGURES 17a-c of *Welland* comprises the continuously variable capacitor circuit for “fine tuning” the frequency. (*Welland*; col. 8, ll. 47-51; col. 9, ll. 44-47). If the proposed modification of *Welland* is made, this continuously variable capacitor circuit would be rendered obsolete by the “varactor for fine tuning the VCO circuit” as recited, in part, in Claim 1. Therefore, one of ordinary skill in the art would have no motivation to keep the continuously variable capacitor circuit upon modifying *Welland* as proposed by the Examiner. On the contrary, the continuously variable capacitor circuit would presumably be replaced by the varactor.

Second, the capacitors illustrated in FIGURE 17a-c merely illustrate various combinations of capacitors, whether in series or in parallel with each other, to create a continuously variable capacitor circuit 406p. The use of capacitors in series with each other or in parallel with each other to create a particular capacitance value, as taught by *Welland*, is nothing more than fundamental circuit design and certainly does not teach, suggest, or disclose a “series capacitor having a capacitance value to linearize a frequency/voltage characteristic of the varactor sufficient to implement direct modulation for a specified channel frequency within the frequency band” as recited in Claim 1.

Furthermore, Applicants traverse the Examiner’s reliance upon *Scoggins* for “a varactor for fine tuning the VCO circuit.” (Office Action, page 4). Although *Scoggins* mentions the use of “back-to-back varactors” in a VCO circuit, nowhere does *Scoggins* explain that either or both of the “back-to-back varactors” of *Scoggins* performs any type of “fine tuning.” Applicants respectfully submit that the Examiner performs what amounts to a keyword rejection by simply locating the word “varactor” in *Scoggins* without regard for its functionality within the VCO circuit. This is impermissible.

For at least the reasons stated above, Applicants respectfully request reconsideration and allowance of Claims 1 and 12. Claims 2-8 and 13-19 depend from independent claims shown above to be allowable and recite further limitations that are patentably distinguishable from the *Welland-Scoggins* combination. For at least these reasons, Applicants respectfully request reconsideration and allowance of Claims 2-8 and 13-19.

Applicants add New Claims 23-27. Claim 23 recites, in part, “A method for tuning a voltage-controlled oscillator (VCO) circuit, comprising ... coarsely tuning the VCO circuit to implement direct modulation for a frequency band ... finely tuning the VCO circuit using a varactor ... and linearizing a frequency/voltage characteristic of the varactor sufficient to implement direct modulation for a specified channel frequency within the frequency band.” For at least the reasons stated above with regard to Claims 1-8, Applicants respectfully request reconsideration and allowance of Claim 23, and Claims 24-27 that depend from Claim 23.

CONCLUSION

Applicants have made an earnest attempt to place this case in condition for allowance. For the foregoing reasons, and for other reasons clearly apparent, Applicants respectfully request full allowance of all pending claims.

If the Examiner feels that a telephone conference would advance prosecution of this Application in any manner, the Examiner is invited to contact Samir A. Bhavsar, Attorney for Applicants, at the Examiner's convenience at (214) 953-6581.

Applicants enclose a check in the amount of \$90.00 to cover the cost of five additional claims. Although no other fees are believed due, the Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 02-0384 of Baker Botts L.L.P.

Respectfully submitted,

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